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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/588,203

11/21/2006

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EXAMINER

MATTHIAS, JONATHAN R

ART UNIT

PAPER NUMBER

3748

MAIL DATE

DELIVERY MODE

11/14/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/588,203	<b>Applicant(s)</b> SHIRAI ET AL.	
	<b>Examiner</b> Jonathan Matthias	<b>Art Unit</b> 3748	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 November 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/02/2006</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1, 4, and 6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Regarding claims 1, 4, and 6, the phrase "etc." renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "etc."), thereby rendering the scope of the claim(s) unascertainable.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 6,449,947 to Liu et al. (Liu).

Liu discloses an SCR catalyst (28) for selectively reducing and purging nitrogen oxide (NO<sub>x</sub>) contained in exhaust gas; an exhaust pipe (14) that allows the exhaust gas to flow into the SCR catalyst; and a reducing agent, etc., supplying means (22) that supplies a reducing agent or a reducing agent precursor to the exhaust gas, characterized in that a plate (32) having air holes (38) which disperse and make a flow

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of the exhaust gas uniform is provided downstream of the reducing agent, etc., supplying means and upstream of the SCR catalyst.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu in view of US Patent No. 6,712,869 to Cheng et al. (Cheng) and applicant's disclosure.

In reference to claim 2, Liu disclose the apparatus of claim 1, including the plate is greater in diameter than the exhaust pipe (see Fig. 1), but fails to disclose that the plate is attached to an end of the exhaust pipe, and in that the air holes are arranged in only an area greater in diameter than the exhaust pipe.

In regards to the limitation of the plate being attached to the end of the exhaust pipe, Applicant admits in the specification that the plate may be disposed in the exhaust pipe or in the muffler, as long as the position is downstream of the reducing agent (p. 6, lines 9-19). Liu discloses the plate being disposed in the muffler, downstream of the reducing agent. It would have been obvious to one having ordinary skill in the art at the time of invention to have disposed the plate in any position downstream of the reductant as a matter of design choice, to have the benefit of mixing the reductant with the exhaust gasses, as taught by Liu (col. 2, line 62-col. 3, line 3).

In regards to the limitation of the air holes arrangement, Cheng teaches a convex plate with holes arranged to result in a more distributed and uniform flow (Fig. 13, Fig. 14; col. 4, lines 49-67). It has been held that when the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (see MPEP 2144.05). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to have arranged the holes as a matter of optimization, to have the benefit of creating a flow of uniform velocity, as suggested by Cheng.

In reference to claim 3, the modified Liu teaches the apparatus of claims 1 and 2, including the plate has a cross-section shaped like a convex, but fails to disclose that the convex is tapering upstream. Cheng teaches a convex plate tapering upstream (Fig. 14). Additionally, Applicant admits in the disclosure that the convex plate may taper in either direction, either upstream or downstream (p. 8, lines 10-19). Furthermore, it has been held that changes in shape are obvious (see MPEP 2144.04). Therefore, it would

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have been obvious to one having ordinary skill in the art at the time of invention to have arranged the plate upstream or downstream, as a matter of design choice, or, as suggested by Cheng.

In reference to claims 4 and 5, Liu teaches an SCR catalyst (28) for selectively reducing and purging nitrogen oxide (NO<sub>x</sub>) contained in exhaust gas; an exhaust pipe (14) that allows the exhaust gas to flow into the SCR; a reducing agent, etc., supplying means (22) that supplies a reducing agent or a reducing agent precursor to the exhaust gas, and a plate having a cross-section shaped like a convex, but fails to disclose an exhaust pipe has air holes in its portion to be inserted into the muffler, and the exhaust pipe is closed by a plate without an air hole. Cheng is brought in merely to teach that it is conventional to include an exhaust pipe with air holes that is closed by a plate without an air hole (Fig. 3). It would have been obvious to one having ordinary skill in the art at the time of invention to have included the features of Cheng into the apparatus of Liu to have the benefit of providing an improved flow distribution, as taught by Cheng (col. 2, lines 55-60).

In reference to claim 6, Liu discloses an SCR catalyst (28) for selectively reducing and purging nitrogen oxide (NO<sub>x</sub>) contained in exhaust gas; an exhaust pipe (14) that allows the exhaust gas to flow into the SCR catalyst; and a reducing agent, etc., supplying nozzle (22) that supplies a reducing agent or a reducing agent precursor to the exhaust gas, characterized in that the reducing agent, etc., supplying nozzle is inserted through a plate (52) having air holes, but fails to disclose that the plate is held in the exhaust pipe. Cheng is brought in merely to teach that it is conventional to attach

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a flow directing plate to the end of an exhaust pipe (Fig. 3). It would have been obvious to one having ordinary skill in the art at the time of invention to have attached the plate to any part the apparatus as a matter of design choice.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent No. 5,272,871 to Oshima et al., US Patent No. 5,412,946 to Oshima et al., US Patent No. 6,745,562 to Berriman et al., US Patent No. 6,722,123 to Liu et al., US Patent No. 6,887,294 to Kanematsu, US Patent No. 7,152,396 to Cheng, US PG PUB No. 2004/0237511 to Ripper et al., US Patent No. 6,935,461 to Marocco, US PG PUB No. 2003/0110763 to Pawson et al., US PG PUB No. 2002/0162322 to Ganzmann et al., and US Patent No. 6,391,267 to Martin et al. disclose similar exhaust devices.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Matthias whose telephone number is (571) 270-5840. The examiner can normally be reached on Monday-Friday 8:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thomas E. Denion/  
Supervisory Patent Examiner, Art Unit 3748

JM